

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method, operable in a computer system, for analyzing of speech, the method causing the computer system to execute the acts of:

inputting a speech signal;

obtaining a first harmonic of the speech signal,

determining a phase-difference ($\Delta\phi$) between the speech signal and the first harmonic for centering a windowing function, wherein said phase difference is determined between a phase of a maximum amplitude of said speech signal and a phase zero of the first

~~harmonic where an amplitude, wherein a zero-crossing of the first harmonic defines the phase zero of the first harmonic is zero;~~ and
outputting the phase difference to a memory for storage.

2. (Previously Presented) The method of claim 1,
wherein the determining comprises the act of determining a
location of said maximum of the speech signal.

3. (Previously Presented) The method of claim 1, whereby the
speech signal is a diphone signal.

4. (Currently Amended) A method for synthesizing speech, the
method, operable in a computer system, comprising the acts of:
windowing by a window function diphone samples obtained from a
speed-speech signal;

selecting the windowed diphone samples, wherein the window
function is centered with respect to a phase angle which is
determined as a phase difference between a phase of a maximum
amplitude of said speech signal and a phase zero of a zero crossing
of a first harmonic of the speech signal ~~where an amplitude of the~~
~~first harmonic is zero;~~ and

concatenating the selected windowed diphone samples to form
the synthesized speech; and
outputting the synthesized speech.

5. (Original) The method of claim 4, the speech signal being a diphone signal.

6. (Previously Presented) The method of claim 4, the window function being a raised cosine or a triangular window.

7. (Previously Presented) The method of claim 4 further comprising inputting of information being indicative of diphones and a pitch contour, the information forming the basis for selecting of the windowed diphone samples.

8. (Previously Presented) The method of claim 7, wherein the information is provided from a language processing module of a text-to-speech system.

9. (Previously Presented) The method of claim 4 further comprising the acts of:

 inputting of speech, and
 windowing the speech by the window function to obtain the windowed diphone samples.

10. (Previously Presented) A computer readable medium storing a computer program product which when loaded into a computer system caused the computer system to perform a method in accordance with claim 1.

11. (Currently Amended) A speech analysis device for analyzing a speech signal comprising:

a filter for obtaining a first harmonic of the speech signal,
a processor for determining a phase difference ($\Delta\phi$) between the speech signal and the first harmonic for centering a windowing function, wherein said phase difference is determined between a phase of a maximum amplitude of said speech signal and a phase zero (ϕ_0) of the first harmonic ~~where an amplitude of the first harmonic is zero, wherein a zero-crossing of the first harmonic defines the phase zero.~~

Claim 12 (Canceled)

13. (Previously Presented) The speech analysis device of claim 11, wherein the speech signal is a diphone signal.

14. (Currently Amended) A speech synthesis device comprising a processor configured for:

selecting of windowed diphone samples of a speech signal, the diphone samples being windowed by a window function being centered with respect to a phase angle which is determined as a phase difference between the speech signal and a first harmonic of the speech signal, wherein said phase difference is determined between a phase of a maximum amplitude of said speech signal and a phase zero of the first harmonic of the speech signal ~~where an amplitude of the first harmonic is zero, wherein a zero-crossing of the first harmonic defines the phase zero; and~~
~~concatenating the selected windowed diphone signals.~~

15. (Original) The speech synthesis device of claim 14, wherein the speech signal is a diphone signal.

16. (Previously Presented) The speech synthesis device of claim 14 the window function being a raised cosine or a triangular window.

17. (Previously Presented) The speech synthesis device of claim 14, wherein the processor is further configured to receive information indicative of diphones and a pitch contour, and to select the windowed diphones based on the information.

18. (Currently Amended) A text-to-speech system comprising:
a language processor for providing information being indicative of diphones and a pitch contour of a speech signal; and
a speech synthesizer configured to:

select windowed diphone samples based on the information,
the diphone samples being windowed by a window function being centered with respect to a phase angle which is determined as a phase difference between a phase of a maximum amplitude of said speech signal and a first harmonic of the speech signal ~~where an amplitude of the first harmonic is zero, wherein a zero-crossing of the first harmonic defines the phase zero;~~ and
concatenate the selected windowed diphone samples.

19. (Original) The text-to-speech system of claim 18, whereby the window function is a raised cosine or a triangular window.

20. (Currently Amended) A speech processing system comprising a processor configured to:

receive a signal comprising natural speech signal,

window the natural speech signal by a window function being centered with respect to a phase angle determined as a phase difference between a phase of a maximum amplitude of said natural speech signal and a phase zero of the first harmonic of the natural speech signal ~~where an amplitude of the first harmonic is zero~~ to provide windowed diphone samples, wherein a zero-crossing of the first harmonic defines the phase zero,

process the windowed diphone samples, and

concatenate the selected windowed diphone samples.

21. (Currently Amended) The method of claim 1, wherein the ~~phase zero is where the amplitude of the first harmonic crosses zero in a transition from a negative amplitude to a positive amplitude of the first harmonic~~ zero-crossing is a positive zero-crossing.

22. (Previously Presented) The method of claim 1, further comprising the act of extracting diphones from the speech signal,

wherein the obtaining act includes low-pass filtering of the diphones.

23. (Previously Presented) The method of claim 4, wherein the window function is centered on the phase angle which is equal to the phase difference plus the phase zero.

24. (Previously Presented) The method of claim 4, wherein the window function is be symmetric with respect to the phase angle.

25. (Previously Presented) The method of claim 4, wherein the window function and the diphone samples that are windowed are offset by the phase difference.